

WILDLIFE CONSERVATION

Status of the Redhead in Southern Manitoba

Ten years ago ducks were in the depths of their "depression"; by 1945 the U. S. Fish and Wildlife Service reported "local over-populations" and concluded that "waterfowl have increased almost to the full carrying capacity of the environment in the early forties" (1945, Wildlife Leaflet 274).

However, the reported increase (which was followed, in any case, by the recent disheartening reports on the situation) related to waterfowl as a group and did not apply to every species. In fact, the upswing was less rapid in some of the diving ducks than in the Mallard, Pintail, and other river ducks; and the Redhead, which responded more slowly than the Canvas-back and Lesser Scaup, is actually suffering a serious population decline in a considerable portion of its breeding range in the Canadian Prairie Provinces.

In Manitoba, the Redhead (*Aythya americana*) breeds in marshland areas through the southern and central portions of the Province west of the Pre-Cambrian Shield. The Netley Marsh, where the Red River empties into Lake Winnipeg, and the Delta Marsh, on Lake Manitoba, are probably the two most important breeding areas of the species in Canada. On both these marshes the Redhead has suffered severe reductions during the last two years; further, I made a survey of other important Redhead breeding marshes in southern Manitoba in early August, 1945, and found the Redhead generally uncommon. I saw few Redheads, though I frequently encountered Canvas-backs, which resort to the same ecological associations as the Redheads during the breeding season. The Canvas-back is less tolerant in its choice of breeding sites than the Redhead; where Canvas-backs are found, one expects to find Redheads as well.

The 1945 spring flight through the Delta region was the lowest for Redheads in seven years. The 1945 breeding population there was lower than that of the previous year. The 1945 fall movement of Redheads through the Delta region was the lowest in seven autumns; indeed, the extreme rarity of Redheads was the outstanding feature of the disappointingly small autumn passage of ducks.

Yet this decrease occurred in the face of improved environmental conditions. The land in southern Manitoba during 1945 was in excellent condition for breeding waterfowl. Late rains of the previous autumn had given a wet freeze-up (the first in several years), and consequently the spring run-off was good. Many sloughs and potholes that had been dry in April and May of the previous year held water in 1945 from the spring break-up through the rearing season. Many, indeed, held water right through the summer and autumn. Thus the area of available breeding sites about the permanent marshes was greatly increased. Moreover, many small scattered depressions through the agricultural region of the Province held water through the season for the first time in at least a decade. Many of these isolated waters, by virtue of the summer rains of 1944, held healthy stands of emergent vegetation of the type required by nesting Redheads.

It is highly unlikely that the species moved elsewhere to breed, for (in contrast to the favorable conditions in Manitoba) large regions of Saskatchewan and Alberta experienced serious drought.

Nor can predation be considered a major factor in the decline. The role of the predator, I believe, is greatly over-played in popular propaganda emanating from the Canadian breeding grounds. I do not deny the seriousness of predation; I merely question the importance of widespread amateur predator control as a means of increasing a population. Regardless of what stand is taken on this question, it is clear that the Redhead is less open to predator losses than are some other species that are increasing. Because of its insular nesting sites in emergent vegetation, the Redhead is less vulnerable to such terrestrial predators as the skunk, ground squirrel, fox, and coyote, all of which regularly prey upon land-nesting species.

Clearly, then, the reasons for the decline in the Redhead population rest in the behavior and the physical make-up of the species. Let us consider these as they relate to reproduction:

Numbers.—The critical population level for an endangered species is unknown. The history of those species which have been exterminated suggests that when a certain low point in population level is reached, the species does not recover, despite improved environmental conditions and the forces of "management." We cannot say that the Redhead is an endangered species. We don't know. We simply know that the continental population, when compared with many other species, is relatively small, and that a species whose population is low even in the face of favorable conditions is endangered. At Delta (though Delta is within the best breeding range of the species), the Redhead is the least common of all ducks during the spring flight. The average ratio of Redheads to Canvas-backs over a seven-year period is 1:3, and the ratio to Lesser Scaup is 1:15. In 1945 the ratio of Redhead to Canvas-back was 1:6. I do not have the figures for the continental population as a whole, but the 1945 statement of the U. S. Fish and Wildlife Service that the Redhead "must be watched" suggests its low numbers (1945, Wildlife Leaflet 274). The very fact that the Redhead is declining while most other species of ducks are increasing is evidence of racial debility.

Sex ratio.—The sex ratio of 926 Redheads (538 males and 388 females), tallied at Delta during the spring flights 1939–1945, was 58%:42%. While this is a small sample spread over a period of years, it suggests a rather heavy preponderance of males. If such an unbalanced ratio obtains in the population as a whole, it is clear that the actual productive portion of the population is considerably less than census estimates—low as they are—would indicate. An unbalanced ratio is characteristic of many other ducks, notably the Canvas-back and Lesser Scaup; but the condition obviously threatens productivity the more seriously as a population is reduced, hence may be a greater handicap in the Redhead than in the other species.

Breeding range.—The breeding range of the Redhead is one of the smallest of the ranges of important North American game ducks (Kortright, 1942, "The Ducks, Geese and Swans of North America," map, p. 234). Because it is southern in its range (as compared with north-ranging species such as the Mallard and Pintail), the Redhead has suffered severely from the changes brought about by agriculture. The whole picture of the Redhead's breeding range is not to be seen in a glance at a map, for the species is greatly restricted within the overall pattern of the range. Since the Redhead depends largely upon emergent vegetation, it is confined mainly to established marsh areas. More tolerant species (such as the Mallard and Pintail, which nest on land and therefore do not demand such a close relationship between territorial water and nesting cover) find acceptable habitat widely spread through their breeding range, and these species regularly pioneer to new areas in wet years. Thus in the wet spring of 1945, a heavy population of river ducks (though almost no diving ducks) pioneered to the agricultural prairie, which had not held so many breeding waterfowl in a decade. The emergent vegetation that is so important to the Redhead requires at least a season to produce its stands; hence there is a lag in the response of this species to improved water conditions. The Redhead is locally concentrated, then, even in wet years. Concentration of a low population is dangerous, for when disaster strikes, it strikes an important segment of the population. In 1944 and 1945, for example, summer floods seriously reduced Redhead production on the great Netley Marsh in Manitoba.

Hunting pressure.—I rate the Redhead the most vulnerable to hunting of all local duck species. The young, which make up the most important portion of the

autumn Redhead population in the Delta region, are, with little doubt, the least wary of all young ducks. These juveniles may be seen moving about the marsh when little else is flying; they come readily to the stool, and they are easily stalked by the wandering hunter. The rankest beginner can bag Redheads in early season, even on a calm day when duck hunting in general is unproductive. Experienced hunters in the Delta region let young Redheads pass as undesirable, but with the increasing number of novices, the species may suffer increasing pressure.

Evidence of its vulnerability is given elsewhere. In 1945, more returns from banded Redheads were received than from Lesser Scaups, although fewer Redheads than Lesser Scaups had been banded (U. S. Fish and Wildlife Service, Wildlife Leaflet 274).

Nesting behavior.—Though there is some individual variation, and the Redhead sometimes nests on dry land, it is in large measure dependent upon emergent vegetation in shallow water for nesting cover, and this tends to concentrate nesting populations. Beyond this, it is clear that a species nesting over water is more vulnerable to seasonal changes than are land-nesters. Floods cause heavy loss in the Redhead. In their classic nesting study, Williams and Marshall found a 26 per cent flood loss in the Redhead, the next highest figure being a 16 per cent flood loss in the Ruddy Duck (Williams and Marshall, 1938, "Duck Nesting Studies, Bear River Migratory Bird Refuge, Utah, 1937," *Jour. Wildl. Manag.*, 2:46-47, Tables 6 and 9 [Note that in a text statement on p. 43, the authors have apparently reversed the figures given in the tables for the two species.]). Low (1940, "Production of the Redhead (*Nyroca americana*) in Iowa," *Wils. Bull.*, 52:163) found that "instability of the water levels, resulting in flooded nests, was the most destructive factor in the production of the Redhead."

Not only floods, but declining levels as well, limit production. In dry years, nests are left far above the receding water, many being abandoned before hatching time.

Although some Redhead nests have been found in hay meadows, and occasionally a serious fire will sweep over emergent vegetation, it is clear that nesting losses due to haying and fire are less severe in the insular-nesting Redhead than in land-nesting species. Thus, the Redhead does not respond as rapidly as river ducks do to management of fire and of hay cutting.

In southern Canada, the Redhead, like the Canvas-back, begins nesting in early May, two or three weeks after Mallards and Pintails. The Canvas-back sees most of its population nesting by early June, but there is a heavy lag in the Redhead—many nests are started after the middle of June. Some of the late nests may be re-nesting attempts, but I am convinced from courting behavior and the size of clutches that many individuals do not start nesting until late, and thus, in case of failure, no substitute nest is possible.

Further, because of an unexplained trait of the species, there is heavy wastage of reproductive energy in the Redhead. Compound nests, holding 20 or more eggs, the product of two or more females, are frequent. Generally such nests are abandoned before incubation is complete.

Young.—The long span of the nesting period brings off a considerable portion of the young late (Hochbaum, 1944, "The Canvasback on a Prairie Marsh." p. 109). In southern Canada, the young Redhead requires 9 to 11 weeks to attain the flying stage. Thus the products of even the first nests are not a-wing until the second week in August, while most young do not fly until late August or early September. Young from late nests are not a-wing until after the hunting season opens, and some of them are still flightless at the freeze-up. It is clear that the number of young produced from a given number of eggs laid is far below that of a "successful" species such as the Mallard, which nests early and produces flying young by midsummer.

I suspect that in species such as the Mallard or Pintail, which begin to fly in July and have two or three months to condition themselves for autumn migration, the role of experience is important to survival. Most young Redheads are a-wing barely on the advent of the shooting season and but little ahead of their southward movement. Moreover, the young of Redheads and other diving ducks are more vulnerable to late-season declines in water level.

Conclusion.—From this discussion we see that waterfowl management, as it is broadly considered and locally practiced, is not necessarily Redhead management; that when we speak enthusiastically of the increase in ducks, we must modify our statements to cover the less favorable outlook for the Redhead. Clearly the Redhead population is below the carrying capacity of its range; clearly the Redhead is not responding rapidly to improvements in environment.

Whether or not the decline in the Manitoba Redhead population, together with the recent drought in Saskatchewan and Alberta, is sufficient to materially reduce the continental population, I cannot say. I suggest: (1) that a permanent, regionally distributed committee be drawn up to maintain a close watch on the Redhead and other species whose numbers are low; (2) that ornithologists challenge all falsely optimistic propaganda relating to waterfowl management and the status of ducks. Waterfowl management policy is to a considerable degree dependent on public opinion, and public opinion is all too often based on reports consisting of half-truths, seriously distorted truths, or complete fabrications. A statement published in July 1945 reported that there was a big hatch of Redheads in southern and central Manitoba, and this was widely reprinted in current periodicals. The statement published later that Redhead production on the Netley Marsh was an almost complete failure and that there was a 1945 decrease in Redheads in the Prairie Provinces does not balance the original error; there is no place in waterfowl policy for hasty "flash" reports. The unfounded optimism resulting from such propaganda may be reflected in unwise and dangerous management policy.—H. Albert Hochbaum.

Conservation News

Insect, weed, and rodent controls.—The end of the war has made possible the release of quantities of the insecticide DDT for civilian purposes. The Bureau of Entomology has prepared a release ("Suggestions Regarding the Use of DDT by Civilians," U.S.D.A. Mimeograph 1574-45, August 22, 1945), outlining specific recommendations for the effective use of DDT and the necessary precautions in relation to beneficial insects and DDT's toxicity to fish and other cold-blooded animals. The publication should help biologists to appraise the importance of DDT in wildlife conservation as well as its value as a pest control.

The recent development of 2,4 D (2,4 Dichlorophenoxyacetic acid) as a weed control agent carries with it important biological implications. It is a growth-regulating substance with a selective herbicidal action that is favorable to weed control in lawns, crop fields, fencerows, and other places. The better lawn grasses, such as Kentucky bluegrass, are not injured by concentrations of sufficient strength to kill a number of "noxious" weeds such as plantain (*Plantago* spp.), dandelion (*Taraxacum officinale*), pigweed (*Amaranthus retroflexus*), and ragweed (*Ambrosia elatior*). Experiments with water hyacinth (*Eichornia crassipea*) in Florida indicate that many aquatic plants may also be susceptible. Although 2,4 D injures broad-leaved crop plants, such as tobacco, cotton, and most vegetables, it apparently can be used in fields without danger to grain and other members of the grass family. Thus, more miles of clean fencerows, more acres of weedless fields, and more weedless lakes and ponds may be expected to result from widespread use of this material. The probable effects on available animal cover and on populations of insect- and seed-eating birds and mammals are obvious. Tests are now being made to determine whether the material has any directly harmful effects on animals or on soil.

Among the new material at man's disposal for destroying life that seems inimical to his interests is the compound known as "1080" (sodium fluoroacetate). Used as a poison to control rodents and other animals, it has given excellent to phenomenal results. Perfected by the Wildlife Research Laboratories of the Fish and Wildlife Service, 1080 is fortunately under the control of the Service, which recently issued a statement that it will not distribute 1080 "in any form to the general public."

G.I.'s and conservation.—A large number of former servicemen are entering professional conservation training under the provisions of the G.I. Bill of Rights and the Army Rehabilitation program. A sharp increase in the number of students interested in conservation has been reported by several institutions that offer training in the fields of soil, water, forest, and wildlife conservation. Records at Ohio State University indicate that 19 per cent of the students who inquired about enrolling during the fall of 1945 expressed a desire to major in some phase of conservation. A large number of these students are interested in professional careers in wildlife administration, management, or research.—C.A.D.

WILDLIFE CONSERVATION COMMITTEE
Charles A. Dambach, *Chairman*

REPORT OF THE SECRETARY FOR 1945

Once again, despite the interruptions of war, the Wilson Ornithological Club has enjoyed a prosperous year. As of December 1, 1945, we had a membership of 1,200, an increase of 116 during the year. The membership roll shows 172 persons joining the Club during 1945, and a loss of only 56 members.

Following is the distribution by classes of our membership. The corresponding figures for 1944 are shown in parentheses for comparison: Founders, 3 (3); Life Members, 34 (24); Sustaining Members, 67 (58); Active Members, 412 (385); Associate Members, 684 (614); total, 1,200 (1,084).

The annual election of officers was conducted by mail ballot, with the following results:

President: George Miksch Sutton
First Vice-President: Olin Sewall Pettingill, Jr.
Second Vice-President: Harrison F. Lewis
Secretary: Maurice Brooks
Treasurer: Burt L. Monroe
Councillors: Milton B. Trautman, Rudolf Bennitt, George H. Lowery, Jr.

At its annual business meeting, October 13, Columbus, Ohio, the Council re-elected Josselyn Van Tyne editor of *The Wilson Bulletin*.

Plans for an annual meeting in 1946 (the first since 1941) are going forward, and details will be announced in a later issue of the *Bulletin*.

The Secretary, speaking for the Club, wishes to thank the many Members whose efforts have contributed toward keeping the Club active during the difficult war years.

December 1, 1945

Respectfully submitted,
MAURICE BROOKS, *Secretary*

The Report of the Treasurer for 1945 will be published in the June issue of the *Bulletin*.—Editor.